

Notice of Allowability

Application No.

10/749,429

Examiner

Phuong Phu

Applicant(s)

RENAUD ET AL.

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Application filed on 8/6/07.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 8/6/07. Accordingly, claims 1-17 are currently pending.

REASONS FOR ALLOWANCE

2. Claims 1-17 are allowed.
3. The following is an examiner's statement of reasons for allowance:
 - Regarding independent claim 1, none of prior art of record teaches or suggests a method comprising procedures of resetting an integrated circuit (IC) device that has an I/O buffer, the I/O buffer having a driver circuit, and a receiver circuit, the driver and the receiver circuits having digitally-controllable transmission line terminations, respectively, the I/O buffer having a digitally-controllable reference signal level; automatically calibrating a plurality of impedance matching compensation values against a reference resistor, by a) calibrating a first compensation value, then b) calibrating a second compensation value, and c) calibrating a third compensation value; and automatically applying the calibrated first, second and third compensation values to set said reference signal level, driver termination, and receiver termination, respectively.
 - Regarding independent claim 6, none of prior art of record teaches or suggests an integrated circuit (IC) device comprising: an I/O buffer, the I/O buffer having a driver circuit, and a receiver circuit, the driver and the receiver circuits having digitally-controllable transmission line terminations, respectively, the I/O buffer having a digitally-controllable reference level; a calibration circuit to calibrate a plurality of signal levels against an external, reference resistor using a plurality of comparators and a plurality of digitally-controllable variable-resistances; and a state machine controller to transition through a first state, a second

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state, and a third state, wherein in each state, the controller is to a) signal the calibration circuit to generate one of the plurality of signal levels, b) initialize a counter, c) control one of the variable-resistances of the calibration circuit to change the generated one of the signal levels until an output of the comparator has signaled the counter to stop counting, and d) update one of i) the reference level of the I/O buffer, ii) the driver termination in the I/O buffer, and iii) the receiver termination in the I/O buffer, based on a value that is approximately the same as a stopped value of the counter, and wherein the state machine controller enters the first state before entering the second state so that in the second state, the stopped value of the counter is obtained using the variable-resistance, in the calibration circuit, as set in the first state.

-Regarding independent claim 12, none of prior art of record teaches or suggests a system comprising: an integrated circuit (IC) device, the IC device having an I/O buffer, the I/O buffer having a driver, and a receiver for a serial point to point link, the driver and the receiver having digitally-controllable transmission line terminations, respectively, the I/O buffer having a digitally-controllable reference level, a standalone calibration circuit to calibrate a plurality of signals against an external, reference resistor, and a state machine controller to transition through a first state, a second state, and a third state, wherein in each state, the controller is to control a signal generated by the calibration circuit until the signal has reached a calibrated level and then update one of i) the reference level of the I/O buffer, ii) the driver termination in the I/O buffer, and iii) the receiver termination in the I/O buffer, based on the calibrated level, and wherein the state machine controller enters the first state before entering the second state so that the calibrated level of the second state is obtained based on the calibrated level of the first state.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (8:00 AM - 4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phuong Phu
Primary Examiner
Art Unit 2611


Phuong Phu
08/22/07

PHUONG PHU
PRIMARY EXAMINER